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ARTIGO ORIGINAL

Changes in dietary patterns during social distancing due to the COVID-19 pandemic

Mudanças nos padrões alimentares durante o distanciamento social devido à pandemia do COVID-19

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Abstract

Objectives: to evaluate changes in dietary patterns, after the social isolation decree, of Brazilians living in the state of São Paulo, Brazil. **Methods:** an online questionnaire self-filled was applied in 2020, with questions about socioeconomic and demographic issues, food consumption, and perception before and after the quarantine decree. Were included people 18 years or more, residents in Sao Paulo, who answered the questionnaire. Confidence intervals of proportions were estimated. Associations were initially investigated through Chi-square or exact Fisher test, and those with a P-value below 0.2 were further investigated through logistic regression or multinomial logistic regression. Associations with a P-value below 0.05 were considered significant. **Results:** 174 people participated in the research. It was observed two different patterns, people who decreased or increased the consumption of candies, soda, industrialized juice, fried food, industrialized snacks, instant noodles, stuffed cookie, fruits, vegetables, and alcohol. When the socioeconomic level raised, the consumption of fried food increased; as the age raised, the consumption of vegetables decreased, and as the age and the income decreased, there was a rise in physical activity level, and higher educational level was associated with higher consumption of sausages, as revealed by the multinomial logistic regression. **Conclusions**: the social isolation after the quarantine decree led the participants to change their food routine, which can lead to health consequences long-term.

Keywords: Diet; Food and Nutrition; Food Security; Social Isolation.

Resumo

Objetivos: avaliar mudanças nos padrões alimentares após o decreto de isolamento social, de brasileiros residentes no estado de São Paulo, Brasil. **Methods**: foi aplicado um questionário online autoadministrado, em 2020, com questões sobre nível socioeconômico e demográfico e de consumo e percepção alimentar antes e após o decreto de quarentena. Foram incluídas pessoas com 18 anos ou mais, residentes no estado de São Paulo. Foram estimadas proporções de intervalos de confiança e associações foram inicialmente investigadas usando teste qui-quadrado ou exato de Fisher, e aqueles com valor de P abaixo de 0.2 foram novamente investigados usando regressão logística ou regressão logística multinomial. Associações com valor de P abaixo de 0.05 foram consideradas significativas. **Resultados**: 174 pessoas participaram da pesquisa. Foram observados dois diferentes padrões alimentares, sendo que um grupo de indivíduos reduziu e um grupo aumentou o consumo de doces, refrigerantes, sucos industrializados, frituras, salgados industrializados, macarrão instantâneo, biscoitos industrializados, frutas, vegetais e álcool. Conforme aumentou o nível socioeconômico, maior foi o consumo de frituras; conforme aumentou a idade, o consumo de vegetais reduziu e houve um aumento no nível de atividade física; maior nível educacional foi associado com maior consumo de embutidos, de acordo com a regressão logística multinomial. **Conclusão**: o isolamento social após o decreto de quarentena levou os participantes a mudarem sua rotina de consumo alimentar, o que pode levar a consequências à saúde em longo prazo.

Palavras-chave: Alimentos; Dieta e Nutrição; Segurança Alimentar; Isolamento Social.

INTRODUCTION

At the end of 2019, the first case of the disease caused by the new coronavirus, SARS-Cov-2 (COVID-19 disease) was reported in Wuhan, China. Since then, the virus has spread rapidly in the country and then spread to countries around the world, despite efforts to prevent it[1]. On January 30th, 2020, the World Health Organization (WHO) declared that the COVID-19 epidemic was an international emergency state of public health, and on March 11th, WHO characterized the disease caused by COVID-19 as a pandemic. By mid-February2022, more than 400 million people had been infected around the world and more than 5.5 million deaths had occurred due to the disease[2].

To stem the spread of the virus, many countries have begun to use containment strategies, to delay outbreaks and not overburden the health system. Most countries have adopted social isolation and quarantine measures, in addition to public health measures, such as the importance of washing hands and the social distance. Quarantine and isolation measures enable greater surveillance of symptomatic people, in addition to restricting population movement, which is effective in preventing the microorganism's transmission. This is an essential strategy when there are no established vaccines or therapies. Quarantine rules apply to individuals exposed to the

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virus, while social isolation is mandatory for those who test positive for the virus infection diagnosis[3].

In Brazil, according to the Ministry of Health, the first cases were reported in late February 2020, with a substantial increase of cases from mid-March on. Up to November 2021, more than 21 million cases had been notified, with a case fatality average rate of 2.8% and exceeding the mark of 610 thousand deaths across the country[4]. The state of Sao Paulo is Brazil´s state with the highest absolute number of cases, presenting more than 4 million cases and more than 152 thousand deaths. Regarding the number of cases per inhabitant, the state of São Paulo appears in the 21st position, with 9,548 people already infected for 100 thousand inhabitants[5]. Due to the rapid progress in the number of cases in the state, quarantine measures have been enacted since March 22nd, 2020, consisting of restricting activities, to avoid possible transmissions or coronavirus spread[6].

Social isolation is associated with interrupting work routine, and this can result in numerous negative consequences, including feeding. This type of situation has been associated with greater energy intake, as greater fat, carbohydrate, and protein consumption. During quarantine periods and the risk of dying from the virus infection, the stress level of the population increases, and these conditions lead people to consume more foods considered "comforting", usually sugary, which involves emotional, behavioral, cognitive, and physiological processes[7].

In addition to changes in food consumption due to isolation, the daily activities interruption led several job categories to lose strength, which resulted in unemployment and loss of income, especially for self-employment individuals. This economic situation raises another concern, the increase in food and nutritional insecurity all over the country[8]. Data from 2021 show that, in Brazil, households with an income of up to ¼ of minimum wage per person presented severe food insecurity. In addition, considering the profile of the reference person in the family, severe food insecurity was six times higher when this person was unemployed, and four times higher among those with informal work, when compared to those who had some type of formal job. Severe food insecurity increased by 19% in households where a resident had lost his job or was indebted because of the pandemic[9].

Considering the exposure, the objective of the study was to compare the dietary pattern of people who lives in the state of Sao Paulo before and after the first quarantine decree in the state, using an online questionnaire.

METHODS

The work is a cross-sectional study, with convenience sampling. Inclusion criteria were adults, over 18 years old, living in the state of Sao Paulo, who agreed to participate in the research after reading the free and informed consent terms, and people who answered all questions on the questionnaire. As exclusion criteria, for participants who answered the questionnaire twice, only the first answer was considered.

An online questionnaire was made available on the Google Forms® platform, using a snowball sampling strategy for recruitment, using the author´s social media Facebook® and Instagram®. The snowball sampling strategy is about a chain-referral method where initial participants (seeds) recruit others from their social network[10]. The questionnaire was self-administered, and the electronic survey was available from June to July 2020. The questionnaire presented questions for the socioeconomic classification[11], sociodemographic questions, and questions related to food consumption and food perception. For issues related to food consumption, the questionnaire was constructed based on food consumption markers questionnaire for adults, from the National Food and Nutrition Surveillance System[12], considering the food consumption markers: fruits, vegetables, sausages, sugar beverages, instant noodles, industrialized snacks, stuffed cookies, sweets, and candies. It was also asked about alcohol beverage consumption. Participants were asked to inform the frequency of consumption before and after the isolation decree. The questions related to eating indicated for the individual to mention their food frequency consumption before and after the quarantine decree in the state of São Paulo and their physical activity frequency before and after the social isolation.

Confidence intervals for the proportions were estimated using Wilson's method. For variables with two categories the software R package "binom" and for variables with more than two categories the package, "DescTools" were used. Initially, associations between an outcome variable and a potentially associated explanatory variable with a P-value below 0.2 were selected using Fisher´s exact test or chi-square test, using software Epi Info 7.2.4.0. These associations were further investigated with logistic regression models for the binary outcome variables and with multinomial logistic regression models for the outcome variables with more than two categories, looking for single or multiple models, using software R. Associations with a P-value below 0.05 were considered significant. Hosmer-Lemeshow test was used to assess if the logistic regression models fit the observed data, and a likelihood ratio test was used to evaluate the assumption of proportional odds in the multinomial logistic regression models. For both assessments, the software R was used. To define the exposure variables to be analyzed to explain a certain outcome variable, causal diagrams were drawn up with any potentially explainable relations based on existing knowledge. After that, univariate analysis was performed, that is, one explanatory variable at a time, considering the P-value and, if there was a significant association, the direction of this association was also considered, only continuing the analysis if the observed association could be supported on existing knowledge. In multiple models, with more than one explanatory variable in the same model, the correlation between the explanatory variables was analyzed, in order not to keep highly correlated variables in the same model.

The study was conducted based on ethical principles from the

Helskinki Declaration 13, submitted to the Ethics Committee from Universidade Paulista, and was approved under process number CAAE 31406320.8.0000.5512.

RESULTS

A total of 174 individuals were included in the study. Table 1 presents the main characteristics of the participants. Most of the participants were women; age group was 36 to 46 years old; having completed University education; wage income was between 3 and 5 minimum salaries (belonging to socioeconomic classes B1 and B2); having no change in monthly income after social isolation has begun.

The quality of food worsened after social isolation began. Most participants reported that they had no concern that the food would run out before they had money to buy more (64.37%) and 92.53% (n = 161) reported that the food did not run out before they had money to buy more food (Table 2).

It is possible to observe that for all analyzed categories the frequency of reduction and increase in consumption was statistically equal, however, it differs from that portion that did not change their diet, which suggests that a large part of the evaluated people changed their eating pattern after the pandemic situation and social isolation (Table 3).

Table 1. Characteristic of the participants about changes on food pattern before and after the social isolation begun, State of São Paulo, Brazil, 2020.

Variable	Category	N	%*	95% Confidence Interval (%)
Sex	Male	47	27.01a	20.96 - 34.05
	Female	127	72.99b	65.95 - 79.04
Age (years)	<25	56	32.18b	25.69 - 39.45
	25 to 35	40	22.99a,b	17.36 - 29.78
	36 to 49	57	32.76b	26.22 - 40.04
	≥50	21	12.07a	8.03 - 17.75
Educational Level	Complete primary education	3	1.72a	0.59 - 4.95
	Incomplete high school	2	1.15a	0.32 - 4.09
	Complete high school	21	12.07b	8.03 - 17.75
	Incomplete University	51	29.31c	23.05 - 36.46
	Complete University	97	55.75d	48.32 - 62.92
Income before social isolation	1 MW or less	4	2.30a	0.90 - 5.76
	2 to 3 MW	38	21.84b	16.34 - 28.55
	3 to 5 MW	70	40.23c	33.23 - 47.65
	6 to 9 MW	34	19.54b	14.33 - 26.06
	10 MW or more	28	16.09b	11.37 - 22.27
Income after social isolation	Reduced	72	41.38b	34.32 - 48.81
	Unchanged	100	57.47b	50.04 - 64.58
	Raised	2	1.15a	0.32 - 4.09
Socioeconomic level	C2	2	1.15a	0.32 - 4.09
	C1	18	10.34b	6.64 - 15.76
	B2	57	32.76c	26.22 - 40.04
	B1	57	32.76c	26.22 - 40.04
	A	40	22.99c	17.36 - 29.78

* For the same variable, different letters indicate a statistically significant difference between the proportions of the categories.
MW: minimum wage.

Table 2. Participants' perception of feeding after the beginning of social isolation, State of São Paulo, Brazil, 2020.

Eating perception	Category	N	%*	95% Confidence Interval (%)
Nutritional quality of food after social isolation begun	Got worse	75	43.10a	35.97 - 50.53
	Unchanged	72	41.38a	34.32 - 48.81
	Improved	27	15.52b	10.89 - 21.64
Food run out before having more money to buy more food	No	161	92.53a	87.64 - 95.58
	Yes	13	7.47b	4.42 - 12.36

* For the same variable, different letters indicate a statistically significant difference between the proportions of the categories.

Table 3. Comparison of food consumption comparing the period before and after the beginning of social isolation, State of São Paulo, Brazil, 2020.

Foods	Consumption	N	%*	95% Confidence Interval (%)
Sweet and candies	Reduced	31	17.82a	12.84 - 24.18
	Unchanged	109	62.64b	55.26 - 69.49
	Raised	34	19.54a	14.33 - 26.06
Soda	Reduced	30	17.24a	12.35 - 23.55
	Unchanged	123	70.69b	63.54 - 76.95
	Raised	21	12.07a	8.03 - 17.75
Industrialized juice	Reduced	17	9.77a	6.19 - 15.09
	Unchanged	142	81.61b	75.19 - 86.66
	Raised	15	8.62a	5.29 - 13.74
Fried food	Reduced	29	16.67a	11.86 - 22.91
	Unchanged	108	62.07b	54.67 - 68.94
	Raised	37	21.26a	15.834 - 27.93
Industrialized snacks	Reduced	17	9.77a	6.19 - 15.09
	Unchanged	138	79.31b	72.69 - 84.66
	Raised	19	10.92a	7.10 - 16.42
Instant noodle	Reduced	15	8.62a	5.29 - 13.74
	Unchanged	138	79.31b	72.69 - 84.66
	Raised	21	12.07a	8.03 - 17.75
Stuffed cookies	Reduced	19	10.92a	7.10 - 16.42
	Unchanged	131	75.29b	68.38 - 81.10
	Raised	24	13.79a	9.45 - 19.70
Fruits	Reduced	29	16.67a	11.86 - 22.91
	Unchanged	126	72.41b	65.34 - 78.52
	Raised	19	10.92a	7.10 - 16.42
Vegetables	Reduced	29	16.67a	11.86 - 22.91
	Unchanged	131	75.29b	68.38 - 81.10
	Raised	14	8.05a	4.85 - 13.05
Alcohol beverage	Reduced	20	11.49a	7.57 – 17.09
	Unchanged	131	75.29b	68.38 - 81.10
	Raised	23	13.22a	8.97 - 19.05
Sausages	Reduced	33	18.97a	13.84 - 25.44
	Unchanged	107	61.49b	54.09 - 68.40
	Raised	34	19.54a	14.33 - 26.06

When asked about physical activity practice habits, it is possible to observe that the most frequent answer was the reduction in physical activity frequency after social isolation began (Table 4).

A significant inverse association (Odds Ratio (OR) = 0.6909) was observed between the outcome variable "concern over food ending" and the explanatory variable "socioeconomic classification" (p=0.0258), that is, the lower the socioeconomic classification, the more frequent it was the concern that the food would run out. The variable "income before quarantine decree" was significantly associated with the outcome variable "food was over" (P = 0.0068), and this was an inverse association (OR = 0.3849). The higher was the family income before the pandemic decree, the less frequent the situation in which food ran out.

The explanatory variable "Income after quarantine decree" was significantly associated, in univariate multinomial logistic models, with the outcome variables "change on sweet consumption" (P = 0.0152), "change on soda consumption" (P = 0.01132) and "change on alcohol consumption" (P = 0.016505). In these three situations, the relation between the explanatory variable and the outcome variables was direct, that is, OR significantly greater than 1, indicating that as the income increased after the decree, the consumption of the respective products also increased (Table 5).

The socioeconomic class showed a significant association with the variable "change on fried food consumption" (P = 0.03615), with a direct relationship between the two variables (OR = 1.3924), which means that a higher socioeconomic classification led to an increase in consumption of fried foods. An inverse relation was observed between the explanatory variable "age" and the outcome variable "change on vegetable consumption" (OR = 0.6548). As age increased, the frequency of people who reported having increased vegetable consumption decreased (P = 0.01635). The educational level significantly (P = 0.0177) and directly (OR = 1.5328) influenced the change in consumption of sausages, that is, the higher the education level, the greater the frequency of people who reported having increased consumption of this kind of food (Table 5).

It was possible to obtain a multinomial logistic regression model with two explanatory variables, "age" and "income after decree", simultaneously explaining the variable "change on physical activity". Both explanatory variables presented a significant association (P < 0.05) with the outcome variable and OR less than 1, indicating that younger age and lower-income after the quarantine decree were associated with increased physical activity after the decree (Table 5).

Table 4. Change in physical activity frequency after social isolation, State of São Paulo, Brazil, 2020.

Physical activity practice	Observed level	Number	%*	95% Confidence Interval (%)
Physical activity	Reduced	80	45.98a	38.74 - 53.39
	Unchanged	64	36.78a	29.97 - 44.16
	Raised	30	17.24b	12.35 - 23.55

* For the same variable, different letters indicate a statistically significant difference between the proportions of the categories

Table 5. Significant associations related to changes in dietary ´patterns after the social distancing observed through simple or multiple multinomial logistic regression models, State of São Paulo, 2020.

Outcome variable	Explanatory variable	Odds Ratio (OR) (95% CI)	P-value
Change sweet consumption	Income after decree	2.0927 (1.1613 – 3.8414)	0.0152
Change soda consumption	Income after decree	2.3669 (1.2424 – 4.6111)	0.01132
Change fried food consumption	Socioeconomic class	1.3924 (1.0237 – 1.9044)	0.03615
Change vegetable consumption	Age	0.6548 (0.4598 – 0.9205)	0.01635
Change alcohol consumption	Income after decree	2.3354 (1.1823 – 4.7680)	0.016505
Change sausage consumption	Educational level	1.5328 (1.0804 – 2.1986)	0.0177
Change physical activiy frequency	Age	0.7419 (0.5605 – 0.9772)	0.034845
	Income after decree	0.5509 (0.3150 - 0.9554)	0.034727

DISCUSSION

Considering the characteristics of the participants in this study, the majority being women and under 46 years, it is possible to notice that the profile of the Brazilian population is similar, according to Brazil´s National Household Sample Survey 2013-2014 (Pesquisa Nacional por Amostra de Domicílio), which shows that 51% of the Brazilian population is female and 48%

are under 49 years old. On the other hand, the national survey shows that only 18% of the Brazilian population completed high education, and 38% earn up to 5 minimum wages, which differs from the characteristics of our participants[14].

We found out that most people reported that the quality of food worsened after social isolation. Ozden and Kiliç (2021) also found that nutrition behaviors have been affected negatively and that the meal patterns of the population have been disturbed after the COVID-19 pandemic[15]. Sousa et al (2020) highlight that in the pandemic scenario, the livelihood of many families was committed, and the availability of nutritious food became even more scarce, which directly impacted food consumption. Therefore, there is a greater consumption of processed and canned foods that are easier to acquire and store and have a longer shelf life. These types of foods have low nutritional value and high caloric value, contributing to the emergence or worsening of overweight and obesity[16].

Moreover, for all food consumption investigated it was noticed two different patterns. There were the same amount of people who decreased and who increased the consumption of candies, soda, industrialized juice, fried food, industrialized snacks, instant noodles, stuffed cookie, fruits, vegetables, and alcohol. Having an increase in income after the quarantine decree was associated with higher consumption of candies and soda. As the socioeconomic level raised, the consumption of fried food increased; as the age raised, the consumption of vegetables decreased, and as the age and the income decreased, there was a rise in physical activity. Higher educational level was associated with higher consumption of sausages.

The same results have been published by other authors worldwide. Górnicka et al. (2020) observed that among Polish adults it was found that 43% of participants had decreased their physical activity during quarantine time and it was observed two opposite patterns of dietary changes, with 28% referring an increase in the intake of vegetables, fruits, whole grains, fish, and a decrease in the intake of discretionary foods. In comparison, 19% related the opposite situation, which was associated with adults over 40 years old, living with children, unemployed, and living in a region with a higher gross domestic product[17].

Ammar et al. (2020) found out that the COVID-19 pandemic negatively affected the physical activity levels and increased daily sitting time by more than 28% among participants from Asia, Africa, and Europe. Additionally, they also found that there was a worsening in the type of food consumption, eating out of control, having snacks between meals, and the number of main meals. Also, the authors observed a decrease in alcohol consumption[18].

In Italy, 16.7% of the population declared having improved their eating habits, whereas 37.2% declared having improved it after 7 weeks of lockdown in the country. In the same period, it was observed a higher frequency of practicing physical activity. Regarding food consumption, 29.8% declared having decreased junk food consumption, and 25.6% increased the consumption of this kind of meal. In addition, having a higher Body Mass Index and a lower age were associated with this increased consumption. The authors also observed that during the lockdown Italians have addicted to Mediterranean food and remained the nutritional quality of daily consumption high, especially in Northern and Central regions[19].

In India, the findings indicated that participants have slightly improved their healthy meal consumption pattern and restricted unhealthy food items, especially among younger people. The author found that participants were avoiding consumption of fast food (81.6%), fried food (62.6%), and junk food (67.6%). They also reported improvement in consumption of fruits and vegetables (38%), milk and dairy products (40%), and meats and eggs (24.1%). It was also observed a reduction in physical activity, especially among men, in upper-socio-economic strata[20]. In France, during the lockdown, it was observed an increase of 14% in energy intake, with an increase in consumption of processed meat, sugary foods, sweet-tasting beverages, and alcoholic beverage. The authors point to the fact that people who related the importance of weight control during lockdown had an increase in nutritional quality, but people who related more the importance of mood, such as the increase of stress, feeling of emptiness, and boredom management, decreased their nutritional quality[21].

During quarantine, the increase in macronutrient intake may be accompanied by a reduction in micronutrients consumption, as occurs in obesity. The circulation restriction leads to fewer visits to markets, and the new habit of increasing food storage at home can contribute to fewer perishable foods consumption. The reduction in micronutrients consumption is associated with deficient immune responses, especially the phagocytes-mediated immune response, the antibodies secretory response, and the complement system activation, leading individuals more susceptible to viral infections[22]. Galmés et al. (2020) point out that countries with the worst intake profile of vitamins (D, A, C, B6, B9, and B12), and minerals (iron, zinc, copper, and selenium) correspond to those with the cruelest blow from the COVID-19 pandemic[23].

Regarding alcohol consumption, it is the most abused substance around the world. Consuming alcohol in moderated amounts is frequently associated with subjective well-being. Social and interpersonal isolation are factors that may induce a rise in alcohol consumption. In Australia, during the pandemic period, there was an increase of around 86% in spending liquor stories. In the United Kingdom and the United States, a raise up to 22% and 27%, respectively, on alcohol spending was observed[24].

Keeping a healthy and balanced diet and being physically active are recommended during the pandemic period to support the immune system. However, factors such as sudden lifestyle

changes, anxiety, fear, stress, and depression can influence food choices and everyday behaviors[25]. We found that lower income was inversely associated with physical activity frequency and that higher education level was directly associated with an increase in consumption of sausages, which are ultra-processed foods. Silva et al. (2019) found a relation between ultra-processed products consumption and the highest socioeconomic condition26. Dumith et al. (2010) also found an association between socioeconomic level and physical activity, being those female adolescents of low or middle socioeconomic level and with physically active parents had a 52% chance of being active[27]. In Mexico, Marrón-Ponce et al. (2018) found that individuals with high socioeconomic status, living in urban areas, and in a household where the head of the family has a high educational level tend to have a higher energy contribution from ultra-processed food[28].

Besides the minority participants in the present study reported that food ran out before they had money to buy more food, more than 35% of participants related that they had a concern that food would run out before having more money to buy more food. Considering that food insecurity is when the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain[29], this brings up the discussion about food insecurity among this population. Data from VISIGAN (2021) shows a negative effect of the COVID-19 pandemic over Brazilian families, finding that 55.2% of Brazilian people were living with some level of food insecurity, 20.5% did not have enough food to meet their needs and 8.9% had to stand up to hunger 9. Failures in the processes of production transport and food supply and lack of families incomes due to the loss of jobs and livelihoods as a result of COVID-19 have caused families worldwide to face greater difficulties in having access to healthy food, which became even more difficult for the poorest and most vulnerable populations[30].

This study has as a limitation the fact of having a convenience sample, and the recruitment was carried out by social networks, which limits the reach of individuals from different sections of the population. Furthermore, the questionnaire was based on self relates, which depends on participants' memory, which can also be a limitation. Despite these limitations and considering the long period that the COVID-19 pandemic already lasts, knowledge about the population´s food pattern during periods of social isolation becomes essential for public policies to be properly constructed, to improve the quality of food consumption and, consequently, the nutritional state, the guarantee of food and nutritional security, as well as health and quality of life.

CONCLUSION

The present study was able to observe that people changed their eating habits after the quarantine decree and social isolation began. Despite a smaller portion of the participants showing improvements, the majority showed a worsening in eating habits, increasing their consumption of candies, soda, industrialized juice, fried food, industrialized snacks, instant noodles, stuffed cookie, and alcohol. Thereby, it is important to note that poor quality of food for long periods has straight consequences on nutritional state and the health of the individual, especially, considering that COVID-19 disease severity has relation with health status. Therefore, the knowledge of populations' food patterns during a pandemic time is of supreme importance for preventive measures, by public policies constructions, actions, and strategies to ensure food and nutritional security during public health emergencies, such as the COVID-19 pandemic.

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